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2

Effect of oxygen and sulfur on the photoelectric effect on alkali metals. V. V. Nalimov and P. V. Timofeev.—*Tech. Phys.* (U.S.S.R.) 3, 602-9(1933).—Max. photo-effect occurs when 4×10^{-7} g. O_2 is present per sq. cm. surface on K or 6×10^{-7} on Na. There is also a max. effect at 5×10^{-7} g. F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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*Secondary Electron Emission From Thin Metal Films Deposited on Glass. A. Afanasjeva, P. Timofejew, and A. Ignatow (Tech. Physics U.S.S.R., 1936, 3, (12), 1011-1019).—[In German.] The secondary electron emission from thin films of molybdenum, nickel, and tungsten deposited on glass is found to be less than that from the respective massive metals, and to decrease with decreasing thickness of film.—J.S.G.T.

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Cesium sulfide and cesium selenide photocathodes
P. V. Timofeev and V. V. Nalimov. J. Tech. Phys.
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by introducing H_2S or H_2Se into evacuated bulbs contg.
clean Ag mirrors, and then distg. Cs vapors onto the Ag_2S
or Ag_2Se surface. The most sensitive lamps are those
contg. about 40 mol. layers of Ag_2S or Ag_2Se. The max.
sensitivity lies between 3500 and 4800 A. At max. sen-
sitivity the amt. of free Cs in the Cs_2O cathodes is greater
than for the Cs_2S cathodes; this causes more rapid evapn.
from the surface. F. H. Rathmann

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PROCESSES AND PROPERTIES INDEX

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Velocity Distribution of Photo-Electrons Emitted by Composite Caesium Cathodes. A. I. Pjatnitzki and P. W. Timofeew (*Physikal. Z. Sowjetunion*, 1936, 9, (2/3), 187–197).—[In German.] The velocity distribution of photo-electrons emitted by oxygen-caesium and sulphur-caesium photo-cathodes due to the incidence of monochromatic light is found to depend on the wave-length of the light and on the structure of the cathode.—J. S. G. T.

METALLURGICAL LITERATURE CLASSIFICATION

M TIMOFEYEV, P.V.

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ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

~~TIMOFEEW, P. W.~~

TIMOFEYEV, P.V.

COMMON ELEMENTS

*Secondary Electron Emission from an Oxygen-Cæsium Electrode. P. W. Timofeew and A. I. Pjatnitzki (Physikal. Z. Sowjetunion, 1936, 10, (4), 518-530).—[In German.] The secondary electron emission from an oxygen-cæsium cathode deposited on various bases, e.g. silver, copper, nickel, molybdenum, and tungsten, coated with various thicknesses of oxide, is investigated. Maximum emission is found in the case of a cathode deposited on silver coated with a layer of silver oxide about 200 molecules thick.—J. S. G. T.

OPEN

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ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AUTHOR INDEX

Effect of Mechanical Deformation on the Properties of Copper Oxide

TIMOFEYEV, P.V.

PROCESSES AND PROPERTIES INDEX

2862. Secondary Electron Emission from Oxidised Silver and Molybdenum Surfaces. A. W. Afanasjewa and P. W. Timofejew. Phys. Zeits. d. Sowjetunion, 10. 6. pp. 831-839, 1936. In German.—The secondary electron emission from oxidised Ag and Mo surfaces is for all velocities of the primary electrons less than that from surfaces of the pure metals. The decrease of the secondary emission for a thickness of oxide coating of 50 molecular layers is brought about by the increased work of emission of the electrons. The further reduction of the secondary emission with increased thickness of the oxide coating is explained by the smaller emissivity of the oxides of Ag and Mo as compared with the pure metals. The location and the height of the maximum secondary electron emission depends on the quantity of the gases adsorbed by the metal or metal oxide surfaces. A. W.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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M

***Secondary Electron Emission from Mixed Rubidium and Potassium Cathodes.** P. V. Timofeev and A. I. Pjatnizkiy (*Zhur. Tehnich. Fiziki* (*J. Tech. Physics*), 1037, 7, (22), 2138-2144).—[In Russian.] The secondary emission of rubidium and potassium is less than that of cæsium. The secondary emission of mixed surfaces of the photo-cathode type is determined by the distribution of the alkali metal in its oxide, and depends considerably on the temperature. —N. A.

METALLURGICAL LITERATURE CLASSIFICATION

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3RD AND 4TH ORDERS

M

*Secondary Electron Emission from Gold, Silver, and Platinum Coated by a Thin Film of an Alkali Metal. A. V. Afanasieva and P. V. Timofeev (Zhur. Tekhnich. Fiziki (J. Tech. Physics), 1937, 7, (22), 2145–2151).—[In Russian.] The electron emission of surfaces covered with alkali metal passes a maximum as the thickness of the film increases; it is some dozens of times larger than that of gold, silver, or platinum surfaces, whilst the photocurrent is many times greater. The secondary emission of alkali metals is less than that of gold, silver, and platinum. The secondary emission is on the whole determined not by the work of emission of the electrons, i.e. by the structure of the surface layer, but by that of underlying layers. Only so long as the latter have a constant structure does a reduction of the work of emission increase the secondary emission.—N. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

BC

Mechanism of secondary emission of electrons from composite surfaces. P. V. TIMOFEEV (Compt. rend. Acad. Sci. U.R.S.S., 1939, 25, 11—15). —The calculation by Morgulis (A., 1939, I, 291) of the energy loss of a secondary electron on movement in the intermediate layer of a Cs_2O emitter, due to interaction between it and electrons with low bond energy, based on impact ionisation, is erroneous. This energy loss is only slightly different from that of a secondary electron in motion in a metal, and the length of the free path should be approx. the same in both cases. The large secondary emission from composite surfaces is due to the extraction of electrons by positive charges formed on the surface of a complex emitter when bombarded by a beam of electrons. The magnitude of the secondary emission is mainly determined by the time of recombination of positive ions, and by the average no. of electrons extracted by unit charge per sec. These quantities are determined by the electrical conductivity of the intermediate layer. A. J. M.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

TIMOFEEV, P. V.

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cA

3

Electron emission from oxygen-cesium cathodes with gold particles in the intermediate layers. P. V. Timofeev and Yu. I. Lun'kova. *J. Tech. Phys.* (U. S. S. R.) 10, 12–19(1940).—The phenomenon of the fatigue at cathodes results from the insufficient elec. cond. of their intermediate layers. Introduction of particles of gold in the intermediate layer of O-Cs cathode or the loosening of the silver surface which makes easier the penetration of alkali metals in the interior considerably reduces the fatigue. Studying v.-amp. characteristics of the non-fatigable cathodes formed on the loosened surface of silver, the authors noticed the jumps of elec. current; this confirms their hypothesis (following abstr.) about the influence of pos. ions on the surface on the emission of secondary electrons. **Antimony-cesium emitters.** *Ibid.* 20–3.—The study of the Sb-Cs photo emitters revealed that they show deviation from proportionality between the secondary current and the intensity of light, and a tendency for satn. at still higher intensities. This phenomenon can be explained as due to the influence of the pos. charges appearing on the surface of the emitters under the action of light. The coeff. of the secondary emission σ increases with the increasing energy of primary electrons and reaches the max. value between 350 and 450 e. v. σ also increases with the decreasing thickness of Sb layer, and for the thickness of 400 A. reaches a max. value of nine. The secondary emission of Sb-Cs emitters can be explained, as in the other complex emitters, as due to the extn. of electrons by the pos. charges on the surface. R. G.

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TIMOFEEV, P. V.

Secondary emission from oxides of metals. P. V.
Timofeev and A. V. Afanas'eva. J. Tech. Phys. (U. S.
S. R.) 10, 28 (1940). The previous investigations by
the authors (J. Tech. Phys. (U. S. S. R.) 6, 1848(1936);
C. A. 31, 8351) of secondary emission from oxidized sur-
faces of Ag and Mo showed that the secondary emission
of oxides is smaller than that of pure metals. On the
other hand, it is well known that the secondary emission
from the oxidized alkali metals, as e. g., Cs, mixed with the
particles of other metals is large. It was therefore inter-
esting to measure the secondary emission for other oxidized
metals. With oxidized Ag, Ni, Mo, Mg to which the
particles of the other metals were admixed, the measure-
ments show that the secondary emission depends on the
properties of the oxides in a larger degree than on the
nature of the admixed particles. It was also found that
the important factor is the elec. cond. of oxides in ques-
tion. For oxidized Ag and Mo (possessing high elec.
cond.) secondary emission is smaller than for the pure
metals, whereas for the oxides of low elec. cond. (Ni, Mg)
the situation is exactly opposite. Roksalana Gamow

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

A B C D E F G H I K L M N P Q R S T U V W X Y Z AA BB CC DD EE FF a b c d e f g h i k l m n o p q

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3

CA

Oxygen barium and oxygen-magnesium emitters of secondary electrons. P. V. Timofeev and R. M. Aranovich. *J. Tech. Phys.* (U. S. S. R.) 10, 32-8(1940).— Oxygen-Ba and O-Mg emitters were studied under different conditions. The results were summarized in the form of curves. These show that O-Ba and O-Mg emitters do not change their properties at high temps. (600° and higher) and that the large changes of the primary c. d. affect their coeff. of the secondary emission only slightly. Thus these emitters are very suitable for the construction of powerful electron amplifiers based on the secondary emission.

Roksalana Gamow

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSES AND PROPERTIES INDEX

cf.

Secondary electron emission from oxygen-cesium emitters at different densities of the primary current. P. V. Timofeev and A. I. Pyatnitskii. *J. Tech. Phys.* (U. S. S. R.) 10, 39-46(1940).—The secondary emission of O-Cs emitters, in most cases steadily increases under the continuous action of the electron beam. This increase occurs as the result of the rearrangement of free Cs in the interior and on the surface of the emitter. It was found that up to the c. ds. of 10^{-4} amp./sq. cm. the coeff. of the secondary emission remains const. and begins to drop rapidly with the further increase of the current. To obtain the max. value of secondary emission for larger densities of primary current, it is necessary to increase the potential removing the secondary electrons. Roksalana Gamow

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755720007-7"

3

cf

Photocells with multistage amplification of the photocurrent by means of secondary electron emission. P. V. Timofeev. *J. Tech. Phys.* (U. S. S. R.) 10, 47-62(1940).—Different constructions of multistage photocells and their properties are described. Math. expressions are established for the dependence of the amplification-coeff. of the secondary current on the parameters characterizing any given photocell. Special attention was given to the amount of noise produced in these photocells.

Roksalana Gamow

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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CR

Motion of electrons between two nonparallel plane electrodes. P. V. Timofeev and E. G. Kormakova. *J. Tech. Phys.* ~~(U. S. S. R.)~~ 10, 63-5(1940).

Roksolana Gamow

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

3

CA

PROCESSES AND PROPERTIES INDEX

The role of surface charges in electronic devices. P. V. Timofeev. *Bull. acad. sci. U.R.S.S., Ser. phys.* 8, 340-2(1944).—In emitters of O-Cs type the photoelectron emission is connected with formation of pos. charges, which in themselves may cause further electron emission. The phenomenon is apparently derived from the presence of dielec. particles (metal oxide) within the surface of the electrode. The utilization of such pos. charges appears to be a promising method for improvement of various electronic devices. G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Valve + [illegible]

WE

2388

621.385

The Role of Surface Charges in Electron Devices. P. Timofeev. (*J. Phys., U.S.S.R.*, 1945, Vol. 9, No. 1, p. 61.) When an insulator is placed near the cathode a large potential gradient can be created due to secondary emission. Cold emission from the cathode can then occur. Kenotrons with cold cathodes have been devised with a potential drop below 100 V. Abstract of a paper of the Acad. Sci. U.S.S.R.

TIMOFEYEV, P. V.

Apr 1948

USSR/Physics
Microscopes, Electron
Lenses, Electromagnetic

"The Form of a Field of Electrostatic Lenses," V. V. Sorokina, P. V. Timofeyev, All-Union Electrotech Inst, Moscow, 8 pp

"Zhur Tekh Fiz" VOL XVIII, No 4, p. 509-16

Departs from laws of mechanics to determine the electrostatic focusing of electronic streams. Determines form of a field of electrostatic lenses. This permits obtaining electronic representation with minimum aberration. Shows methods to calculate and construct new 'hyperbolic' lenses.

Submitted 30 Apr 1947

PA 64T90

TIMOFEYEV, P. V.

"Electron Emission From Complex Surfaces," by P. V. Timofeyev, All-Union Electrical Engineering Institute imeni Lenin, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 20, No 9, Sep 56, pp 993 (abbreviated report)

The writer considers the quantitative theory of complex emitters such as alkali, alkali earth metals and their oxides still in their initial and experimental stage. Because electron emission from such complex emitters takes place from surface layers not exceeding 10^{-6}cm in thickness, they should be determined by surface levels only without consideration of inner layers. It was established that complex emitters of the cesium oxide type are able to emit positive ions at a high electric field gradient and at 20°C temperature.

Sum 1258

109-2-1-11/17

AUTHOR: Timofeyev, P. V.

TITLE: Electron Emission from Compound Surfaces
(Emissiya elektronov so slozhnykh poverkhnostey)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol 2, Nr 1, pp 85-91 (USSR)

ABSTRACT: Considered in the article are photoeffect, secondary emission, and field emission from compound surfaces. Characteristics of compound emitters are examined, and new data on the processes taking place in such emitters is presented. Experimental findings are compared to the existing notions about the mechanism of emission from compound emitters.
Compound surfaces of alkaline and alkali-earth metals, and also oxygen and other compounds of such metals, are used for electron emission at the present time. The existing quantitative theory of photoeffect is based on notions of I. Ye. Tamm (reference 1) about the surface and volume photoeffects. As certain simplifying assumptions were made in the development of that theory, it needs a detailed experimental verification. Specifically, spectral characteristics for pure alkaline metals determined experimentally do not agree with the calculations based on that theory. An oxygen-cesium photocathode consists of

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Electron Emission from Compound Surfaces

a mixture of cesium, silver, and cesium-oxide particles. The thickness of the surface film taking part in electron emission from a cesium cathode is about 100 molecular layers. It is assumed that electron liberation under the effect of light occurs as a result of photo-ionization of the cesium atoms contained in the cathode. This assumption can be confirmed by a consideration of cathode-fatigue phenomena. At those points of an oxygen-cesium cathode which are sensitive to infra-red light, the electrons are liberated by the effect of positive charges accompanying the photoelectron-emission phenomenon. Recently, it was discovered that with illumination of a part of an oxygen-cesium photocathode, not only that part but also a non-illuminated part shows fatigue signs (dissertation by P. G. Borżyak). This phenomenon was investigated in detail by A. I. Pyatnitskiy. It is explained by the assumption that when the active part of a photocathode is depleted, it absorbs cesium from the cesium vapor inside the phototube which causes evaporation of cesium from the non-illuminated part of the photocathode. On the basis of the above theory, V. V. Sorokina, VEI, developed a method of manufacturing transparent oxygen-cesium cathodes with an integral sensitivity of 70 μa/lumen. N. D. Morgulis, P. G. Borzyak, and

Electron Emission from Compound Surfaces

B. I. Dyatlovitskaya found that an antimony-cesium cathode has a much more homogeneous structure than that of an oxygen-cesium cathode; also, that the quantum yield at maximum sensitivity of an antimony-cesium cathode is much higher than that of an oxygen-cesium cathode.
The secondary emission factor of metals and semiconductors is 1.5 or lower.
A. Ye. Kadyshevich tried to develop a qualitative theory of secondary emission for compound emitters. According to his theory, a higher secondary emission from compound emitters is explained by better conditions of interaction of the primary electrons with emitter electrons and by a greater free-path length of the secondary electrons in such emitters than in metals. However, later experience did not corroborate this theory. The emission largely depends on the structure of the surface layer of a compound emitter. It could be considered proven that positive charges appearing on the surface of compound emitters tend to considerably increase the emission from such surfaces. A high secondary emission is observed only in such cases when the emitter is a metal surface coated with a thin film of low-conductivity substance. The secondary-emission factor depends on the thickness of the film, and grows with the increase

in thickness. At a thickness of about 10^{-6} cm, the factor reaches 10-12. Oxide-magnesium emitters are stable at a low density of secondary current, $2-3 \cdot 10^{-3}$ a/cm^2. Trial operation of electron multipliers with such emitters has shown that they work over 15.000 hours without changing their parameters. As found by V. V. Shepel', the field emission from oxide-magnesium, oxide-aluminum, and other emitters follows the Fowler and Nordheim law. However, for oxygen-cesium emitters, the field emission does not follow that law at temperatures as low as 20° C. An oxygen-cesium cathode cooled down to liquefied-nitrogen temperature does follow the law of Fowler and Nordheim. The field emission from an oxygen-cesium cathode also increases when the cathode is illuminated. The author believes that the above investigations of field emission from an oxygen-cesium cathode prove that positive charges appearing at the surface of composite emitters influence the electron emission from the emitters.

The following conclusions are drawn: Investigations of the electron emission from composite emitters and from semiconductors showed that the energy structure of electron levels within the emitters does not determine the electron emission from them. In electron emission, a substantial part is played by the

Electron Emission from Compound Surfaces

surface energy levels of electrons. The photoelectric emission from cesium photocathodes is largely determined by the distribution of free cesium in the surface layer of such cathodes. A large secondary emission is always observed in such cases when, in the surface layer of an emitter, particles of a low-conductivity substance are present which can bear positive charges. In all probability, a high secondary emission from compound emitters comes as a result of the action of positive surface charges. Field emission from a compound emitter depends on the positive charges on its surface and increases with the appearance of these charges.

There are 2 figures and 5 references, 3 of which are Soviet, in the article.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut (the All-Union Electrical-Engineering Institute)

SUBMITTED: June 25, 1956

AVAILABLE: Library of Congress

1. Alkali metals--Theory 2. Secondary emission--Applications 3. Cathodes --Production 4. Secondary emission multipliers--Performance

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755720007-7"

TIMOFEYEV, P. V. and KORMAKOVA, Ye. G.

"Electron Multipliers of VEI" (All-Union Electro-technical Institut)"

A Conference on Electron and Photo-electron Multipliers : Radiotekhnika i Elektronika, 1957, Vol. II, No. 12, pp. 1552 - 1557 (USSR)

Abst: A conference took place in Moscow during February 28 and March 6, 1957 and was attended by scientists and engineers from Moscow, Leningrad, Kiev and other centres of the Soviet Union. Altogether, 28 papers were read and discussed.

FOTIN, V.P.; AKOPYAN, A.A.,red.; ANDRIANOV, K.A.,red.; BIRYUKOV, V.G.,glavnyy red.; BUTKEVICH, Yu.V.,zamestitel' glavnogo red.; GRANOVSKIY, V.L., red.; KALITVYANSKIY, V.I.,red.; KLYARFEL'D, B.N.,red.; KRAPIVIN, V.K., red.; TIMOFEYEV, P.V.,red.; FASTOVSKIY, V.G.,red.; TSEYROV, Ye.M., red.; SHEMAYEV, A.M.,red.; DEMKOV, Ye.D.,red.; FRIDKIN, A.M.,tekhn. red.

[Voltage increase on long a.c. lines during nonsymmetric short circuits to ground] Povysheniia napriazhenii v dlinnykh liniiakh peremennogo toka pri nesimmetrichnykh korotkikh zamykaniiakh na zemliu. Moskva, Gos.energ.izd-vo, 1958. 223 p. (Moscow. Vsesoiuznyi elektrotekhnicheskii institut. Trudy, no.64) (MIRA 12:2)
(Electric lines) (Short circuits)

TIMOFEYEV, P. V.

SOV/142-58-6-20/20

30(7)

AUTHOR: Stepanenko, I. P., Docent

TITLE: International Congress on Atomic Energy and Electronics (Mezhdunarodnyy kongress po atomnoy energii i elektronike)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - Radiotekhnika, 1958, Nr 6, pp 744-746 (USSR)

ABSTRACT: This is a report on the V International Congress on Atomic Energy and Electronics held in Rome on June 16-28, 1958. P. V. Timofeyev, Corresponding Member, AS USSR, reported on "A New Type of Highly-Sensitive Camera Tube - Ebikon."

ASSOCIATION: Kafedra elektroniki Moskovskogo inzhinerno-fizicheskogo instituta (Chair of Electronics of the Moscow Physics and Engineering Institute)

SUBMITTED: August 5, 1958

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30-1-20/39

AUTHOR: Timofeyev, P. V., Corresponding Member, AS USSR.

TITLE: Short Reports (Kratkiye soobshcheniya). The 4. International Convention on Atomic Energy, Electronics, and Radio Engineering (IV Mezhdunarodnyy kongress po atomnoy energii, elektronike i radiotekhnike).

PERIODICAL: Vestnik AN SSSR, 1958, Vol. 28, Nr 1, pp. 104-105 (USSR)

ABSTRACT: The congress took place in Rome from June 22 to July 7, 1957. It was attended by the representatives of Italy, England, Belgium, Poland, the USSR, U.S.A., France and other countries. The reports on atomic energy referred to the building of electric power stations. The majority of the reports on electronics, radio engineering, and automation was delivered by the representatives of firms. Reports dealt with the methods of producing semiconductor devices and of their application. Also questions of automation, computers, and the use of electronics and nuclear radiation for medical purposes were discussed. The Soviet scientists reported about counters of nuclear radiations (A. A. Markov), on the electron system of the synchrophasotron of the United Institute for Nuclear Research (A. A. Vasil'yev), on electronoptical devices for investigations carried out with gamma rays (P. V. Timofeyev). The congress

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Short Reports. The 4. International Convention on Atomic Energy, Electronics, and Radio Engineering.

was connected with an exhibition. The Soviet delegates demonstrated an apparatus for the application of atomic energy in industry and medicine. After the end of the congress the Soviet delegates accepted the invitation by Italian firms to visit firms of the elctron-, electrical engineering-, and optical industries.

AVAILABLE: Library of Congress

1. Atomic energy-Reports 2. Electronics-Reports

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SOKOLOV, Nikolay Nikolayevich; ANDRIANOV, K.A., red.; AKOPYAN, A.A., red.; BIRYUKOV, V.G., glavnyy red.; BUTKEVICH, G.V., red.; GRANOVSKIY, V.L. red.; GERTSENBERG, G.R., red.; ZABYRINA, K.I., red.; KALITVYANSKIY, V.I., red.; KLYARFEL'D, B.N.; SAKOVICH, A.A.; TIMOFEYEV, P.V.; FASTOVSKIY, V.G.; TSEYROV, Ye.M.; FRIDMAN, A.Ya.; SHEMAYEV, A.M.; TIMOKHINA, V.I., red.

[Methods for the synthesis of organopolysiloxanes] Metody sinteze poliorganosiloksanov. Moskva, Gos.energ. izd-vo. 1959. 198 p. (Moscow. Vsesoiuznyi elektrotekhnicheskii institut. Trudy, no.66) (MIRA 12:5)

(Siloxanes)

21(1), 21(4) SOV/89-6-4-12/27

AUTHORS: Timofeyev, P. V., Simchenko, Yu. A.

TITLE: Atomic Source of High Voltage (Atomnyy istochnik vysokogo napryazheniya)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 4, pp 470-472 (USSR)

ABSTRACT: An atomic source is described which may be used in portable devices for the feeding of various tube circuits. Two glass cylinders are coaxially melted into a glass balloon, which are connected with each other by a metal ring. On the internal cylinder, the collector of the β-partilces is, on the one hand, fastened by means of an annular spring, and may, on the other hand, be centered by means of a mica ring. The collector consists of an external nickel- and an internal aluminum cylinder. Owing to this construction, the back scattering of the collector amounts to ~14% of the entire β-particle current impinging upon it. A nickel tube of only a few μ thickness is arranged coaxially to the collector; in its interior the preparation is uniformly applied. Current lead-out wires (positive: platinum wire-glass sealing, negative(collector): direct wire metal ring) end in normal cable caps such as are usual in counters. As a β-source $Sr^{90}-Y^{90}$ with a

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total activity of ~ 343 mC is used. At a resistance of $1.6.10^{13}$ ohm (resistance of the source and of the electrostatic voltmeter S-96) the device furnishes a voltage of up to 24 kV . The time constant is $\sim 6.10^{2}$ sec. The utilization coefficient of β-radiation is $\sim 76\%$. 14% are lost by back scattering. The remaining 10% of losses are due to absorption, slowing-down of electrons in the field emittor-collector, and to the fact that the solid angle concerned is smaller than 4π. The voltage-resistant characteristic of the atomic voltage source is given. By means of this source low capacities or high resistances (10^{11} to $1.5.10^{13}$ ohm) may be measured in certain wiring circuits. The life-time of the source is limited only by the half-life of the β-radiator. The properties of the source do not vary in the case of temperature fluctuations of from +50 to -50°C. Short circuits are not dangerous to the source. This atomic voltage source may be connected both parallel and in series. In radiocircuits it causes no noise. There are 3 figures and 12 references, 1 of which is Soviet.

SUBMITTED: May 31, 1958

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88341

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E192/E482

9,4110 (1003,1105,1140)

AUTHORS: Aranovich, R.M., Ksendzatskiy, I.G. and Timofeyev, P.V.
(Moscow)

TITLE: Cold-Cathode Electronic Tubes

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, No.6, pp.143-147

TEXT: The cathodes employed in normal electron tubes produce the emission by virtue of being heated to comparatively high temperatures. Apart from being heated, these cathodes have the disadvantage of a comparatively short life. Consequently, attempts have been made to develop cold cathodes and in 1938 two of the authors (Refs.1,2) discovered that it was possible to obtain a sustained secondary emission from metal cathodes coated with thin layers of high-resistivity materials. Recent years have witnessed the development of an electron tube based on a magnesium oxide 27 cathode (Ref.3). Such cathodes were prepared and investigated also. The base of the cathode was made of nickel which was 27 coated with magnesium carbonate by means of cataphoresis, the thickness of the coating being 50 μ. The cathode was heated in a vacuum so that the magnesium carbonate was decomposed into MgO and

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Cold-Cathode Electronic Tubes

CO_2 and the layer of the magnesium carbonate on the cathode was converted into a layer of magnesium oxide whose thickness was about 30 µ. The layer of magnesium oxide prepared in this way had a porous structure capable of sustaining electron emission. However, in order to produce the emission, it is necessary to place a grid in the vicinity of the cathode and apply a potential difference between the nickel base of the cathode and the grid. The emission can be obtained if the potential difference is about 120 V, provided the energy of the electrons bombarding the cathode is less than 50 eV. The emission can be initiated by bombarding a cathode with an electron current of 10^{-10} A, provided the electron energies are of the order of a few eV. When the electrons pass through the layer of magnesium oxide the cathode is heated. This effect was investigated experimentally and the results are shown in a figure. The electron emission from magnesium-oxide cathodes is probably due to the field emission from the nickel base of the cathode which is caused by the action of the positive charges produced on the surface layer of the magnesium oxide while this is bombarded by the electron

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Cold-Cathode Electronic Tubes

current at the instant of initiating emission. During the operation of the cathode, the positive charge on the magnesium-oxide layer is maintained as a result of the secondary emission from the walls of its pores, which emit the electrons. The magnesium-oxide cathodes were used in constructing an amplifier pentode tube which, apart from the three grids, had a starter electrode consisting of tungsten filaments; the filaments were situated in special holes provided in the anode cylinder. The construction of the tube is shown diagrammatically in Fig.2, where 1 is the magnesium-oxide cathode, 2, 3 and 4 are the grids, 5 is the anode and 6 and 6' are tungsten filaments of the starter. One side of the filaments is connected to the anode, while their remaining terminals are attached to special input pins of the tube; the starter filaments are used as an electron source for bombarding the magnesium-oxide cathode at the instant of switching-on the tube. The tube was constructed of standard components and had the dimensions of the tube type 30П1С (30P1S). The grid-anode characteristics of the tubes were

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measured. One set of experimental curves is shown in Fig.6, where the anode current I_a is plotted as a function of the voltage U_y applied to the control grid; the voltage of the screen grid was 250 V, while the anode voltage was varied from 180 to 300 V. From these experimental characteristics it is seen that a slope of 0.5 to 0.6 mA/V can be obtained over a comparatively wide linear region. The tubes of this type can operate only if the potentials at all the grids and the anodes are positive with respect to the cathode; the control of the anode currents can only be achieved if the control grid is given a positive potential. Secondly, the tubes have a comparatively large noise level. The tubes can be used as audio frequency amplifiers and their great advantage lies in the fact that their life is almost indefinitely long and their starting time is comparatively short. The experimental tube described in this article cannot be regarded as fully successful since it was not constructed of specially designed components. The authors express their gratitude to V.S.Gorshkov for testing the tubes.

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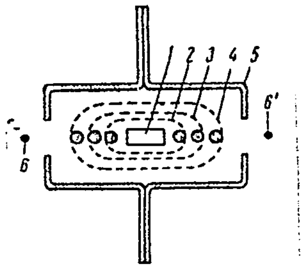
Cold-Cathode Electronic Tubes

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V.I.Lenina (All-Union Electrotechnical Institute imeni V.I.Lenin)

SUBMITTED: September 12, 1960



Фиг. 2. Схематический вид лампы с оксидно-магниевым катодом: 1 — оксидно-магниевый катод; 2, 3 и 4 — сетки, 5 — анод, 6 и 6' — вольфрамовые нити стартера

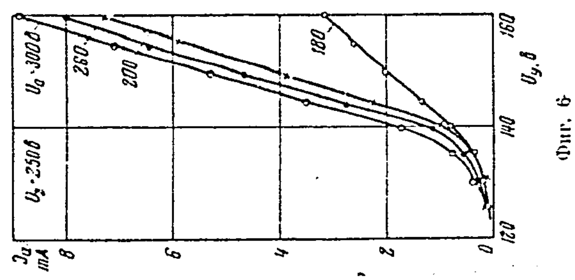


Fig.6.

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9.3120 (1003, 1137, 1140)
9.4140 26.1640

S/109/60/005/008/001/024
E140/E555

AUTHORS: Timofeyev, P. V. and Simchenko, Yu. A

TITLE: β-Electron Emission in Vacuum and its Applications

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.8, pp.1197-1202

TEXT: The authors state that in electronics the applications of radioisotopes are limited to the experimental use of β and α-radiation for power supplies. At the end of the paper certain speculations are presented on the use of radioisotopes in cathodes. Popov's use of β-radiation to charge an electroscope in 1901 is claimed as the first practical utilization of charge transfer by nuclear particles. Mosely's 150 kV source of 1913 is also cited. The use of semiconductor or thermoelectric devices to convert β-radiation energy to electrical energy cannot find wide application because lattice defects form in the crystals and destroy their properties. The applications holding most promise are those in which differences of potential arise through the transfer in vacuum of β-particles and thus of electric charge from one electrode of a capacitor to another. The article presents a review

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APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755720007-7"

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β-Electron Emission in Vacuum and its Applications

of devices furnishing 10^{-9} to 10^{-8} A at 20 to 40 kV, as previously described in Ref.3. Among the known radioisotopes, the most suitable sources of β-radiation are Pm^{147} and Sr^{90} - Y^{90}. As the latter give rise to hard X-rays in a nuclear generator, they necessitate large and heavy metal shields, and are therefore inconvenient as miniature power supplies. Pm^{147} has a maximum β-electron energy of 0,222 MeV and a mean β-spectral energy of about 75 keV, with a half-life of 2.3-2.7 years. The salt used for β-electron emitters can be outgassed at high temperatures in vacuum. The X-radiation is negligible. The gas evolution during operation is also much more favourable for Pm^{147}. A sectional drawing of a typical supply device is shown in Fig.2, where 1 is the β-electron source consisting of a nickel cylinder having a thin film of radioisotopes on its inner surface. It is supported by glass 4, sealed to a copper cylinder 2. The collector 3 is of aluminium and is mounted inside the copper cylinder. The assembly is in a metal housing 5, whose walls are of sufficient thickness to suppress the X-radiation. The high-voltage lead 6 is

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β-Electron Emission in Vacuum and its Applications

insulated from the body. A typical curve of output voltage against load resistance is shown in Fig.4. Due to the exceedingly high stability of such sources, they may be used with such apparatus as image converters, photo-conductive television camera tubes, permitting operation at maximum ratings and efficiency. The emission of β-electrons can be utilized to establish a positively-charged surface. This could be employed with, for example, magnesium-oxide cathodes which give stable emission of up to 10 mA under the effects of positive surface charge, as described in earlier work (Ref.6). There are 6 figures and 7 references: 5 Soviet and 2 non-Soviet.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut imeni V. I. Lenina (All-Union Electrotechnical Institute imeni V. I. Lenin)

SUBMITTED: December 21, 1959

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21592

S/109/60/005/010/015/031
E032/E114

9.4140

AUTHORS: Timofeyev, P.V., and Sorokina, V.V.

TITLE: Electron emission in electron-optical (image) converters for γ-rays

PERIODICAL: Radiotekhnika i elektronika, Vol.5, No.10, 1960, pp. 1687-1691

TEXT: This paper was read at the 9th All-Union Conference on Cathode Electrons in Moscow, October 1959.
A γ-ray image converter, designed for use in defectoscopy, is described. Fig.1 shows a schematic drawing of the image converter. The converter has two electrodes located in a glass envelope. The cathode, 1, is spherical in form and is attached to a metal rim which in turn is attached to the base of the envelope. The cathode is made of 0.1 mm thick aluminium foil and faces the anode cylinder, 2. The aluminium foil is coated with a layer of phosphor, 3, which is about 0.4 mm thick. A Sb-Cs photocathode, 4, is deposited onto the phosphor. The walls of the envelope are covered by a conducting layer 5, and a luminescent screen 6 which is used in the visual inspection of the image is located
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E032/E114

Electron emission in electron-...

inside the anode cylinder, which is held in position by the rod 7. A thin film of aluminium is deposited on the luminescent screen on the cathode side. The cathode, which is in contact with the conducting layer 5, serves as the electrode of an electrostatic lens which focuses electrons leaving the surface of the cathode on irradiation by γ-rays. The anode cylinder is the second electrode of the lens. The dimensions and the disposition of the electrodes were chosen so as to obtain equipotential surfaces in the form of hyperboloids of revolution. It was shown by the present authors (Refs.2, 3) that this is the optimum form of the field. Two types of such converters have been made; in one the cathode is 30 mm in diameter and the working voltage is 16-18 kV. The electron-optical reduction is equal to 6. The resolution is 5 lines per mm and the brightness of the image is 400-500 times greater than on ordinary X-ray screens. The second type has a working cathode diameter of 100 mm, electron-optical reduction of 9, and a working voltage of 22-25 kV. The resolution of this converter is 3 lines per mm, and it intensifies the image brightness by a factor of 1000 - 15 000. There are 6 figures and 3 references: 1 Soviet and 2 non-Soviet.

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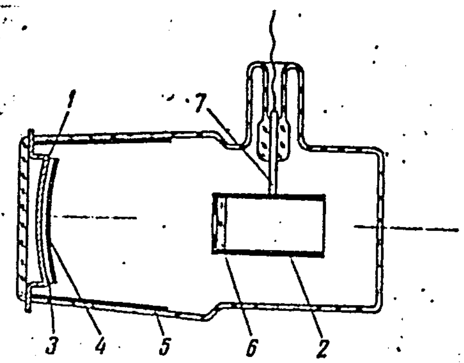
21592

Electron emission in electron- S/109/60/005/010/015/031
E032/E114

SUBMITTED: December 21, 1959

Fig. 1



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9.4170 (inc 3005)
9.4175
26.2421

21593
S/109/60/005/010/016/031
E032/E114

AUTHORS: Timofeyev, P.V., and Kormakova, Ye.G.

TITLE: Properties of photomultipliers with caesium oxide photocathodes

PERIODICAL: Radiotekhnika i elektronika, Vol.5, No.10, 1960, pp. 1692-1697

TEXT: This paper was first read at the 9th All-Union Conference on Cathode Electronics, Moscow, October 1959. The photomultipliers described in this paper are designated as ФЭУ-2 and ФЭУ-3 (FEU-2 and FEU-3). They have cylindrical geometry and differ from each other in dimensions and the form of the anode (Timofeyev and Kormakova, Ref.1: same journal, 1959, 4, 10, 1678). The number of stages in both types is 13. The dynodes are coated with magnesium oxide, and a caesium-oxide photocathode is employed. The photocathode diameter for FEU-2 is 40 mm and for FEU-3 it is 20 mm. The caesium-oxide photocathode has a long wave limit of 1100-1200 mμ. Spectral characteristics of photomultipliers with caesium-oxide photocathodes are shown in

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E032/E114

Properties of photomultipliers ...

The maximum sensitivity is obtained at 740-780 mu. These Fig.2. photomultipliers have the disadvantage that they are subject to fatigue. The fatigue effect is associated with the fatigue of the caesium-oxide photocathode. Fig.3 shows the variation in the total amplification and the photocurrent as a function of time (initial output current 15 μA). This figure was obtained with a specimen showing the maximum variation with time. The fatigue of caesium-oxide photocathodes shows itself in the reduction in the integral sensitivity and the displacement of the long wave limit towards shorter wavelengths. The fatigue effect can be produced by both white and red light. The fatigue effect is observed not only while the photocathode is illuminated but also in the dark. Fig.4 shows the relative change in the photocurrent during the operation of the photomultiplier. The first part of the curve is obtained with the photocathode illuminated with red light. During the first 1.5 hours the photocurrent decreased by 4%. The photomultiplier was then left in the dark for 18 hours and was again illuminated (first discontinuity in the curve). As can be seen, the fatigue effect continued to increase while the photomultiplier was "resting". Fig.5 shows the integral sensitivity of FEU-3 for

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Properties of photomultipliers ... S/109/60/005/010/016/031
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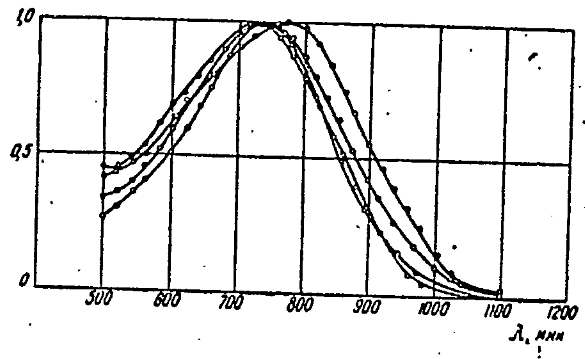
various working voltages. Fig.7 shows the ratio of the dark current I_T to the sensitivity γ of the photomultiplier as a function of the sensitivity. The best signal-to-noise ratios are obtained with overall voltages between 1000 and 1400 V. It is concluded that photomultipliers with caesium-oxide photo-cathodes are very suitable for measuring very low light intensities. There are 7 figures and 2 Soviet references.

SUBMITTED: December 21, 1959

Fig.2



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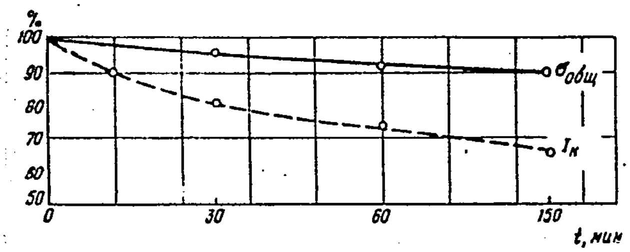
%
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80
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t, мин
$\sigma_{общ}$
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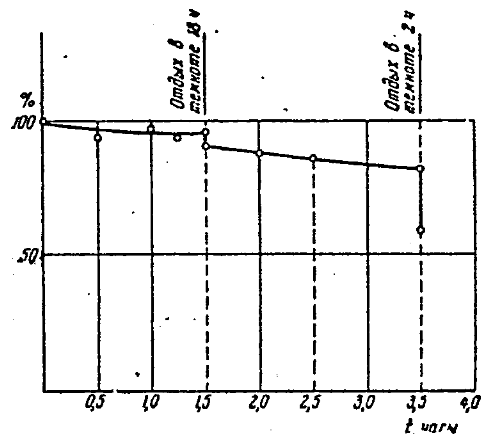
Fig.3


%
100
50
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t, час
Отдых в темноте 18 ч
Отдых в темноте 2 ч

Fig.4

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Properties of photomultipliers....

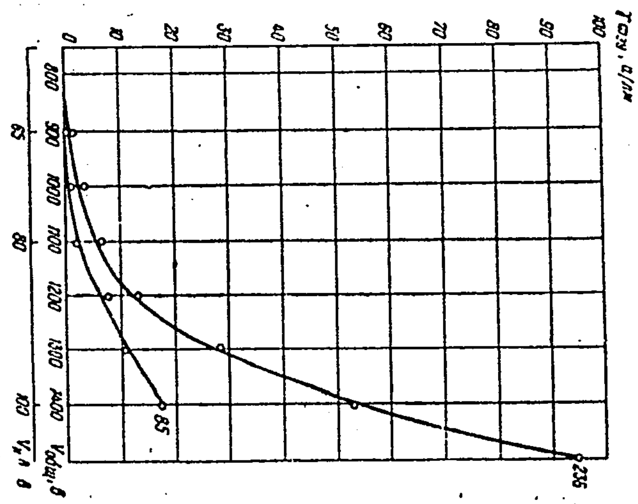

Fig.5

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Properties of photomultipliers....

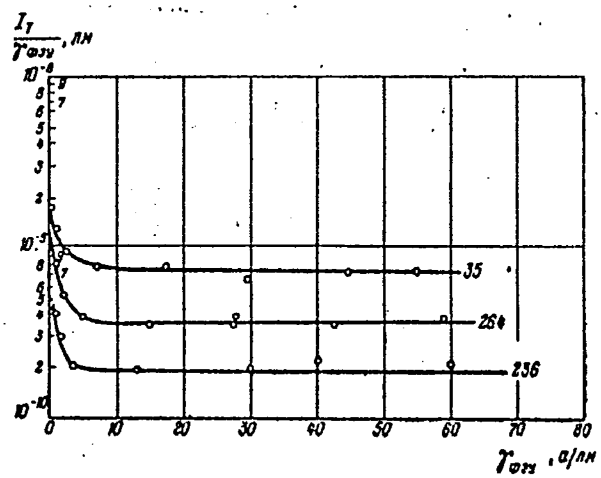

Fig.7

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TIMOFEYEV, P.V.

BERG, A.I., glav. red.; TRAPEZNIKOV, V.A., glav. red.; BERKOVICH, D.M., zaml glav. red.; LERNER, A.Ia., doktor tekhn. nauk, prof., zam. glav. red.; AVEN, O.I., red.; AGEYKIN, D.I., red.; kand. tekhn. nauk, dots., red.; AYZERMAN, M.A., red.; VENIKOV, V.A., doktor tekhn. nauk, prof., red.; VORONOV, A.A., doktor tekhn. nauk, prof., red.; GAVRILOV, M.A., doktor tekhn. nauk, prof., red.; ZERNOV, D.V., red.; IL'IN, V.A., doktor tekhn. nauk, prof., red.; KITOV, A.I., kand. tekhn. nauk, red.; KOGAN, B.YA., doktor tekhn. nauk, red.; KOSTOUSOV, A.I., red.; KRINITSKIY. N.A., kand. fiz.-mat. nauk red.; LEVIN,G.A.,prof.red.; LOZINSKIY, M.G., doktor tekhn. nauk, red.: LOSSIYEVSKIY, V.L., red.; MAKSAREV, Yu.Ye., red.; MASLOV,A.A.,dots.,red.;POPKOV,A.A.,red.; RAKOVSKIY, M.Ye., red.; ROZENBERG, L.D., doktor tekhn.nauk, prof., red.; SOTSKOV, B.S., red.; TIMOFEYEV, P.V., red.; USHAKOV, V.B., doktor tekhn. nauk, red.; FEL'DBAUM, A.A., doktor tekhn. nauk, prof., red.; FROLOV, V.S., red.; KHARKEVICH, A.A., red.; KHRAMOY, A.V., kand. tekhn. nauk, red.; TSYPKIN, Ya.Z., doktor tekhn. nauk, prof., red.; CHELYUSTKIN, A.B., kand. tekhn. nauk, red.; SHREYDER, Yu.A., kand. fiz.-mat. nauk, dots., red.; BOCHAROVA, M.D., kand. tekhn.nauk, starshiy nauchnyy red.; DELONE, N.N., inzh., nauchnyy red.; BARANOV, V.I., nauchnyy red.; PAVLOVA, T.I., tekhn. red.

(Continued on next card)

BERG, A.I.—— (continued). Card 2.

[Industrial electronics and automation of production processes]Avtomatizatsiia proizvodstva i promyshlennaia elektronika. Glav. red. A.I.Berg i V.A.Trapeznikov. Moskva, Gos.nauchn. izd-vo "Sovetskaia Entsiklopediia." Vol.1. A - I. 1962. 524 p. (MIRA 15:10)

1. Chlen-korrespondent Akademii nauk SSSR (for Sotskov, Kharkovich, Zernov, Timofeyev, Popkov).
(Automatic control) (Electronic control)

40397
S/109/62/007/009/006/018
D409/D301

9.3120

AUTHORS: Aranovich, R.M., Ksendzatskiy, I.G., and Timofeyev, P.V.

TITLE: Some emission properties of electron tubes with cold cathodes

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 9, 1962, 1529 - 1538

TEXT: The changes are studied which take place in electron tubes during the initial period of operation of cold cathodes. It was found that the temperature of the cathode core at I_c = const., as well as the starting time of the cathode, depend on the tube design. All the measurements were carried out on electron tubes, described by the authors (Ref. 4: Izv. AS SSSR, otd. tekhn. n. (Energetika i avtomatika), 1960, 6, 143). A figure shows the dependence of the emission current I_c on the cathode-core temperature, after treatment in an oxygen atmosphere, and after additional treatment in a hydrogen atmosphere. These experiments, however, yielded no defini-
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Some emission properties of ... S/109/62/007/009/006/018
D409/D301

te conclusions on the role of the oxygen or hydrogen treatment. The free path of electrons in a porous MgO-layer was measured. The experimental setup is described. The free path was found to be ~3 microns. As the MgO-layer is 40-50 microns thick, it follows that the fast electrons which are observed in the self-sustaining emission, are apparently not originating from the metallic cathode-core, but from the adjacent layers. The surface potential of the cold cathode was measured by a convenient method. This method involves the charging of a freely-suspended electrode which receives the electrons, emitted by the cold cathode. It was found that the potential of the free electrode is very close to the potential of the cathode surface-layer. A figure shows the dependence of the potential and of the grid voltage on the emission current. The above method was used for controlling the surface-layer state at the initial moment of operation of the cathode. The measurements were conducted on a large number of tubes. It was found that the method used, yields a true estimate of the surface state and that changes take place in the cathode during its operation, as a result of which the surface potential is no longer constant. The experiments showed that the self-sustaining processes take place in the surface layer itself, whose
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thickness is comparable with the free path. The obtained results yield the following practical conclusions: It is necessary to insert in the grid circuit of electron tubes with cold cathodes, large ballast resistors and to connect them to the total supply-voltage; it is recommended using a supply-voltage of the order of 500 volt. This leads to stabilization of the emission current. In those cases in which no additional (sustaining) grid is necessary, it is recommended linking all the grids; thereby the tube steepness increases. Thus, the triodes prepared had a steepness of 0.7 - 0.8 mA/v, whereas the steepness of the three-grid tubes was 0.4 - 0.5 mA/v, under the same conditions. The above investigations were carried out for cathodes under transient operating conditions which involve only a drop in the emission current at the initial moment. Further investigations, involving a current rise, are necessary. There are 14 figures. The most important English-language reference reads as follows: A.M. Skellet, B.G. Firth, D.W. Mayer, Proc. I.R.E., 1959, 47, 10, 1704.

SUBMITTED: March 19, 1962

Card 3/3

BERG, A.I., glav. red.; TRAPEZNIKOV, V.A., glav. red.; TSYPKIN, Ya.Z., doktor tekhn. nauk, prof., red.; VORONOV A.A., prof., red.; AGEYKIN, D.I., doktor tekhn.nauk red.;GAVRILOV, M.A., red.; VENIKOV, V.A., doktor tekhn. nauk, prof., red.; SOTSKOV, B.S., red.; CHELYUSTKIN, A.B., doktor tekhn. nauk, red.; PROKOF'YEV, V.N., doktor tekhn. nauk, prof., red.; KITOV, A.I., IL'IN, V.A., doktor tekhn. nauk, prof., red.; KITOV, A.I., doktor tekhn. nauk, red.; KRINITSKIY, N.A., kand. fiz. mat. nauk, red.; KOGAN, B.Ya., doktor tekhn. nauk, red.; USHAKOV, V.B., doktor tekhn. nauk, red.; LERNER, A.Ya., doktor tekhn. nauk, prof., red.; FEL'DBAUM, A.A., doktor tekhn. nauk, prof., red.; SHREYDER, Yu.A., kand. fiz.-mat. nauk, red.; KHARKEVICH, A.A., akademik, red. [deceased]; TIMOFEYEV, P.V., red.; MASLOV, A.A., dots., red.; TRUTKO, A.F., inzh., red.; LEVIN, G.A., prof., red.; LOZINSKIY, M.G., doktor tekhn. nauk, red.; NETUSHIL, A.V., doktor tekhn. nauk, prof., red.; POPKOV, V.I., red.; ROZENBERG, L.D., doktor tekhn. nauk, prof., red.; LIFSHITS, A.L., kand. tekhn. nauk, red.; AVEN, O.I., kand. tekhn. nauk, red.; BLANN, O.M [Blunn, O.M.], red.; BROYDA, V., inzh.,prof.,red.; BREKKL', L [Brockl,L.] inzh., knad. nauk, red.; VAYKHARDT, Kh. [Weichardt, H.], inzh., red.; BOCHAROVA,M.D., kand. tekhn. nauk, st. nauchn. red.

[Automation of production processes and industrial electronics] Avtomatizatsiia proizvodstva i promyshlennaia elektronika; entsiklopediia sovremennoi tekhniki. Moskva, Sovetskaia entsiklopediia. Vol.4. 1965. 543 p. (MIRA 18:6)

L 22739-66 EWP(k)/EWP(h)/EWT(d)/EWP(l)/EWP(v)

ACC NR: AP6013621 SOURCE CODE: UR/0105/65/000/009/0088/0088

AUTHOR: Aleksenko, G. V.; Biryukov, V. G.; Borisenko, N. I.; Borushko, V. S.; Kovalev, N. N.; Kostenko, M. P.; Obolenskiy, N. A.; Petrov, G. N.; Rozanov, A. A.; Skidanenko, I. T.; Timofeyev, P. V.; Chilikin, M. G.; Sheremet'yevskiy, N. N. 21 79 B

ORG: none

TITLE: Honoring the 60th birthday of Professor Andronik Gevondovich Iosif'yan

SOURCE: Elektrichestvo, no. 9, 1965, 88

TOPIC TAGS: academic personnel, scientific personnel, automation, electric engineering, servosystem, automatic control

ABSTRACT: 21 July 1965 was the 60th birthday of the eminent Soviet scientist in the field of electrical mechanics and automation, Dr. Techn. Sci., Professor, Member of the AS Armenian SSR, Hero of Socialist Labor, Laureate of the State Prize, A. G. Iosif'yan. His scientific contributions are numerous. During 1931-1934 he developed the theory of the combined synchronous control circuit with AC commutator generator. Subsequently, he invented the contactless selsyn. He was the first Soviet scientist to publish studies of thyratron-based servosystems for the control of electrical machinery. During 1940-1945 he made a major contribution to the theory of electrical machinery and automatic control by publishing studies on the general theory of the elec-

UDC: 621.3:65.011.56

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ACC NR: AP6013621

2

tromechanical amplifier (amplidyne) and power-driven synchronous servosystems. In his 35 years of scientific activity A. G. Iosif'yan has published more than 60 studies on many problems of electrical mechanics and automatic control and has been the author of 24 inventions. A. G. Iosif'yan is the founder and director of the All-Union Order of Labor Red Banner Scientific Research Institute of Electromechanics, and it was on his initiative that branches of this institute have been established in Leningrad, Tomsk, Yerevan, Frunze, Iskra, and Kudinovo. Between 1950 and 1955 he held the elective office of Vice President of the Armenian Academy of Sciences, and since 1955 he has been Editor-in-Chief of the journal Elektrotekhnika (Electrical Engineering). He is also the bearer of many other honors. Among other things, he was elected delegate to the 22nd Congress of the CPSU. Orig. art. has: 1 figure. [JPRS]

SUB CODE: 09 / SUBM DATE: none

Card 2/2

L 38900-66 EWT(1)

SOURCE CODE: UR/0109/66/011/005/0966/0967

ACC NR: AP6029724

AUTHOR: Zernov, D. V.; Timofeyev, P. V.; Fursov, V. S.; Migulin, V. V.; Spivak, G. V.; Spasskiy, B. I.; Nilender, R. A.; Grozdover, S. D.; Shemayev, A. M.; Solntsev, G. S.; Kuzovnikov, A. A.; Zaytsev, A. A.; Vasil'yeva, M. Ya.; Mitsuk, V. Ye.; Dubinina, Ye. M.; Zheludeva, G. A.

ORG: none

TITLE: Nikolay Aleksandrovich Kaptsov

SOURCE: Radiotekhnika i elektronika, v. 11, no. 5, 1966, 966-967

TOPIC TAGS: electric engineering personnel, magnetron, klystron, corona discharge, gas conduction, gas discharge plasma

ABSTRACT: N. A. Kaptsov passed away 10 February 1966. He was a student of the famous P. N. Lebedev, and performed many fundamental investigations in the development of modern electronics. He was the creator and leader of the chair of electronics of Moscow State University. He developed the concept of phase grouping of electrons. His ideas are the basis for the development of the magnetron and klystron. He developed the concept explaining the phenomenon of corona discharge. He also developed ideas connected with formation of gas conduction and phenomena in a gaseous-discharge plasma. Kaptsov served for years as the head of the physical laboratory and consultant to the Moscow Electron Tube Plant. He was the author of numerous books, including "Physical Phenomena in Vacuum and in Gases, which was translated into foreign languages; he also created and taught numerous electronics courses. [JPRS: 36,501]

SUB CODE: 05, 09 / SUBM DATE: none

0918 0203

Card 1/1